

## INTERNATIONAL SEARCH REPORT

Intern<sup>al</sup> Application No

PCT/US2004/039135

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N5/08 A61K35/14 A61K38/20 A61P37/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS, EMBASE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MEHTA D S ET AL: "IL-21 induces the apoptosis of resting and activated primary B cells." JOURNAL OF IMMUNOLOGY, vol. 170, no. 8, 15 April 2003 (2003-04-15), pages 4111-4118, XP002335927 ISSN: 0022-1767	
A	PARRISH-NOVAK J ET AL: "Interleukin-21 and the IL-21 receptor: novel effectors of NK and T cell responses." JOURNAL OF LEUKOCYTE BIOLOGY, vol. 72, no. 5, November 2002 (2002-11), pages 856-863, XP009041183 ISSN: 0741-5400	

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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

14 July 2005

Date of mailing of the international search report

01/08/2005

Name and mailing address of the ISA

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Teyssier, B

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PARRISH-NOVAK J ET AL: "Interleukin 21 and its receptor are involved in NK cell expansion and regulation of lymphocyte function" NATURE, vol. 408, no. 6808, 2 November 2000 (2000-11-02), pages 57-63, XP002186602 ISSN: 0028-0836 cited in the application	
P,A	NUTT S L ET AL: "Interleukin 21: a key player in lymphocyte maturation." CRITICAL REVIEWS IN IMMUNOLOGY, vol. 24, no. 4, 2004, pages 239-250, XP008049790 ISSN: 1040-8401	
X	WO 03/052083 A (CANCER RESEARCH TECHNOLOGY LIMITED) 26 June 2003 (2003-06-26) the whole document	30
X	WO 03/082212 A (THE GOVERNEMENT OF THE UNITED STATES OF AMERICA, REPRESENTED BY THE SE) 9 October 2003 (2003-10-09) the whole document	5,6,8, 13-15, 17,20
X	SUTO A ET AL: "Interleukin 21 prevents antigen-induced IgE production by inhibiting germ line Cepsilon transcription of IL-4-stimulated B cells." BLOOD, vol. 100, no. 13, 15 December 2002 (2002-12-15), pages 4565-4573, XP002270575 ISSN: 0006-4971 the whole document	5,6,8, 13-15, 17,20
P,X	OZAKI K ET AL: "Regulation of B cell differentiation and plasma cell generation by IL-21, a novel inducer of Blimp-1 and Bcl-6." JOURNAL OF IMMUNOLOGY, vol. 173, no. 9, 1 November 2004 (2004-11-01), pages 5361-5371, XP002335928 ISSN: 0022-1767 the whole document	1-31

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## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: —  
because they relate to subject matter not required to be searched by this Authority, namely:  

Although claims 5–20 are directed to methods of treatment, the search has been carried out and based on the alleged effects of the composition.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; It is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2004/039135

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 03052083	A	26-06-2003	AU	2002352436 A1		30-06-2003
			EP	1458855 A2		22-09-2004
			WO	03052083 A2		26-06-2003
			JP	2005512540 T		12-05-2005
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WO 03082212	A	09-10-2003	AU	2003226141 A1		13-10-2003
			CA	2481304 A1		09-10-2003
			WO	03082212 A2		09-10-2003
			US	2005063947 A1		24-03-2005
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